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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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09/545,785

04/07/2000

Tirdad Sowlati

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11/04/2003

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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BRIARCLIFF MANOR, NY 10510

EXAMINER

NADAV, ORI

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|--------------------------------|--|
| Office Action Summary | Application No. 09/545,785 | Applicant(s) SOWLATI ET AL. | |
| | Examiner ori nadav | Art Unit 2811 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 20 August 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings were received on 8/20/2003. The examiner approves these drawings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng et al. (5,583,359).

Regarding claims 1-3 and 7, Ng et al. teach in figure 8 and related text a capacitor 200 over a substrate 202 comprising a first level 210 of at least four electrically conductive parallel lines extending in a first direction and lying in a first plane, at least a second level 212 comprising metal or polysilicon (column 9, lines 65-66) of at least four electrically conductive parallel lines extending in the first direction and lying in a second plane above the first plane, each of the second level lines being disposed over a respective one of the first level lines, such that the lines of the first and second levels are arranged in a series of at least four coplanar line pairs, each line pair comprising one of the first level lines

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and a respective one of the second level lines; a dielectric layer 250 (figure 9) disposed between the first and second levels of conductive lines; a plurality of vias 230 arranged in a plurality of groups, each group corresponding uniquely to one of the coplanar line pairs and each group including at least two vias connecting the first level line and the second level line of the corresponding line pair (6 vias per line are depicted in figure 8), and electrically opposing nodes forming the terminals of the capacitor, the array of parallel capacitor plates electrically connected to the opposing nodes in an alternating manner so that the plates have alternating electrical polarities (figures 10-11).

Figure 8 does not depict an array of at least four parallel capacitor plates. Figure 10 depicts a capacitor comprises plurality of parallel capacitor plates (fingers) of alternating polarity. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an array of at least four parallel capacitor plates in Ng et al.'s device, in order to adjust the capacitance of the device according to the requirements of the application in hand.

Regarding claim 4, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a dielectric layer comprising silicon dioxide in Ng et al.'s device, because silicon dioxide is a conventional dielectric material, of which judicial notice may be taken.

Regarding claims 5, 6, 14 and 19, Ng et al. teach in figure 8 at least a third level 214 of at least four electrically conductive parallel lines extending in the first

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direction and lying in a third plane above the first and second planes such that each of the third level lines is coplanar with a respective one of the line pairs, and a second dielectric layer 252 (figure 9) disposed between the second and third levels of conductive lines so that the third level of lines vertically extends the array of at least four parallel capacitor plates.

Regarding claims 8-11, Ng et al. teach a capacitor being formed using known CMOS techniques (column 2, lines 56-57). Therefore, the capacitor comprises a sub-micron CMOS structure, as claimed.

Regarding claims 12 and 15, Ng et al. teach in figure 8 a plurality of vias 230 arranged opposite a next respective plurality of vias, with identical spacing of vias in each plurality of vias.

Regarding claims 13 and 18, Ng et al. teach in figure 8 a plurality of vias 230 directly connecting the first level line and the second level line of corresponding line pair.

Regarding claims 16 and 20, Ng et al. teach in figure 8 each group includes four vias.

Regarding claim 17, Ng et al. teach in figure 8 first and second vias connecting the first level line and the second level line of corresponding line pair at

respective first and second ends of the first and second level lines, respectively, wherein the second ends are opposite the first ends along the first direction.

Response to Arguments

2. Applicant argues that Ng et al. do not teach plurality of vias 230 having at least two vias that correspond uniquely to one of the coplanar line pairs and each group including at least two vias connecting the first level line and the second level line of the corresponding line pair.

Figure 8 of Ng et al. depicts a first level line and a second level line being connected by at least 6 vias 230. The broad recitation of the claim does not require that each group be physically separated from each other. Therefore, although the 6 vias 230 are connected to each other, they can still be arbitrarily divided into plurality of groups.

Applicant argues that Ng et al. do not teach that each group includes four vias, as recited in claims 16 and 20.

Applicant considers the first level of Ng et al.'s device as being the most bottom level, and the second level as being the level adjacent to the most bottom level. However, the first level of Ng et al.'s device can be defined as the most bottom level, and the second level can be defined as the top level. Thus, plurality of vias (more than 16) are present between the first and second levels.

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Applicant argues that Ng et al. do not teach first and second vias connecting the first level line and the second level line of corresponding line pair at respective first and second ends of the first and second level lines, as recited in claim 17.

The two outmost first and second vias correspond to the first and second ends of the first and second level lines. Therefore, Ng et al. teach in figure 8 first and second vias connecting the first level line and the second level line of corresponding line pair at respective first and second ends of the first and second level lines, respectively, wherein the second ends are opposite the first ends along the first direction, as claimed.

Applicant argues that figure 11 of Ng et al. does not depict plurality of vias extending directly between the first and second level lines.

Figure 11 of Ng et al. depicts a top plan view of one cross section of figure 8. Figure 8 of Ng et al. depicts plurality of vias extending directly between the first and second level lines.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is (703) 308-8138. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

A handwritten signature in black ink, appearing to read 'Ori Nadav', with a stylized flourish at the end.

O.N.
November 3, 2003

ORI NADAV
PATENT EXAMINER
TECHNOLOGY CENTER 2800